

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

NEODRON LTD.,

Plaintiff,

v.

TEXAS INSTRUMENTS INC.,

Defendant.

Case No. 2:20-cv-00190-JRG

CLAIM CONSTRUCTION MEMORANDUM OPINION AND ORDER

Before the Court is the opening claim construction brief of Neodron Ltd. (“Plaintiff”) (Dkt. No. 50, filed on March 9, 2021),¹ the response of Texas Instruments Inc. (“Defendant”) (Dkt. No. 53, filed on March 23, 2021), and Plaintiff’s reply (Dkt. No. 54, filed on March 30, 2021). The Court held a hearing on the issues of claim construction and claim definiteness on April 20, 2021. Having considered the arguments and evidence presented by the parties at the hearing and in their briefing, the Court issues this Order.

¹ Citations to the parties’ filings are to the filing’s number in the docket (Dkt. No.) and pin cites are to the page numbers assigned through ECF.

Table of Contents

I.	BACKGROUND	3
A.	U.S. Patent No. 8,054,090.....	3
A.	U.S. Patent No. 8,253,706.....	5
II.	LEGAL PRINCIPLES	6
A.	Claim Construction	6
B.	Departing from the Ordinary Meaning of a Claim Term.....	9
C.	Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)	10
III.	AGREED CONSTRUCTIONS.....	11
IV.	CONSTRUCTION OF DISPUTED TERMS.....	11
A.	U.S. Patent No. 8,054,090.....	11
A-1.	“charge-accumulation capacitor” and “charge-measurement capacitor”	11
A-2.	“grounding” and “ground”.....	17
A-3.	“predetermined amount of charge”	21
A-4.	“noise”.....	23
B.	U.S. Patent No. 8,253,706.....	25
B-1.	“manipulating the first response and the second response to reject noise at frequencies less than a frequency associated with the pulse”	25
V.	CONCLUSION	28

I. BACKGROUND

Plaintiff alleges infringement of two U.S. Patents: No. 8,054,090 (the “’090 Patent”) and No. 8,253,706 (the “’706 Patent”) (collectively, the “Asserted Patents”).

A. U.S. Patent No. 8,054,090

The ’090 Patent is entitled Noise Handling in Capacitive Touch Sensors and issued from an application filed on October 22, 2008.

In general, the ’090 Patent is directed to technology for handling noise in a capacitive touch sensor, such as may be found in touch-sensitive screens of a computer or appliance.

The abstract of the ’090 Patent provides:

In a capacitive sensor of the type having X electrodes which are driven and Y electrodes that are used as sense channels connected to charge measurement capacitors, signal measurements are made conventionally by driving the X electrodes to transfer successive packets of charge to the charge measurement capacitors. However, an additional noise measurement is made by emulating or mimicking the signal measurement, but without driving the X electrodes. The packets of charge transferred to the charge accumulation capacitor are then indicative of noise induced on the XY sensing nodes. These noise measurements can be used to configure post-processing of the signal measurements.

Claims 1 and 4 of the ’090 Patent, exemplary method and apparatus claims respectively, recite as follows (with terms in dispute emphasized):

1. A method comprising:

grounding a first plate of a ***charge-accumulation capacitor***;
injecting, through a resistor coupled to a voltage source, a ***predetermined amount of charge*** onto a ***charge-measurement capacitor***;
transferring an amount of charge accumulated on a second plate of the charge-accumulation capacitor to a first plate of the charge-measurement capacitor, the charge having accumulated on the second plate of the charge-accumulation capacitor due at least in part to ***noise***; and
determining, through a measured voltage across the charge-measurement capacitor, the amount of charge.

4. An apparatus comprising:

a ***charge-measurement capacitor*** having a second plate coupled to a first plate of a ***charge-accumulation capacitor***; and

one or more non-transitory computer-readable storage media embodying logic that is operable when executed to:

ground the first plate of the charge-accumulation capacitor; inject a **predetermined amount of charge** onto the charge-measurement capacitor through a resistor coupled to a voltage source; transfer an amount of charge accumulated on a second plate of the charge-accumulation capacitor to a first plate of the charge-measurement-capacitor, the charge having accumulated on the second plate of the charge-accumulations capacitor due at least in part to **noise**; and determine, through a measured voltage across the charge-measurement capacitor, the amount of charge.

The '090 Patent was recently construed by the U.S. District Court for the Western District of Texas in Claim Construction Order, *Neodron Ltd. v. Cypress Semiconductor Corp.*, 6:20-cv-523-ADA (W.D. Tex. Mar. 29, 2021), Dkt. No. 37. There, the court addressed related claim-construction disputes as follows:

term	Plaintiff's Proposal	WDTX Defendants' Proposal	WDTX Construction
“charge-accumulation capacitor” • '090 Patent, Claims 1, 4, 10	“a capacitor having a capacitance sensitive to proximity of a body”	Indefinite. If definite, “a capacitor having a capacitance sensitive to proximity of a body”	Not indefinite. “a capacitor having a capacitance sensitive to proximity of a body.”
“ground[/ing] a first plate of charge-accumulation capacitor” • '090 Patent, Claims 1, 4, 10	No construction necessary.	“taking a first plate of a charge-accumulation capacitor from an ungrounded state to a grounded state during the performance of the other steps of the method”	Plain-and-ordinary meaning.
“predetermined amount of charge” • '090 Patent, Claims 1, 4, 10	No construction necessary.	“a predetermined amount of charge that is less than the amount required to fully charge the charge-measurement capacitor”	Plain-and-ordinary meaning.

Id. at 3.

A. U.S. Patent No. 8,253,706

The '706 Patent is entitled Apparatus Using a Differential Analog-to-Digital Converter and issued from an application filed on June 26, 2009.

In general, the '706 Patent, like the '090 Patent, is directed to technology for handling noise in a touch sensor.

The abstract of the '706 Patent provides:

Electronic apparatus and methods of operating the electronic apparatus include less than a frequency associated with a generated waveform. In various embodiments, an apparatus using a differential analog-to-digital converter can perform low frequency noise rejection that can be implemented in a variety of applications. Additional apparatus, systems, and methods are disclosed.

Claims 1 and 13 of the '706 Patent, exemplary method and system claims respectively, recite as follows (with terms in dispute emphasized):

1. A method comprising:

acquiring a first response from an output line of a matrix touch screen, the first response being a capacitively induced signal derived from a rising edge of a pulse applied to an input line of the matrix touch screen;

acquiring a second response from the output line of the matrix touch screen, the second response being a capacitively induced signal derived from a falling edge of the pulse applied to the input line of the matrix touch screen; and

manipulating the first response and the second response to reject noise at frequencies less than a frequency associated with the pulse.

13. A system comprising:

a matrix touch screen having an input line and an output line, the output line configured with respect to the input line to acquire a capacitively induced signal derived from a pulse applied to the input line of the matrix touch screen;

a waveform capture circuit configured to capture characteristics of the capacitively induced signal including a characteristic varying in one direction, the characteristic varying in the one direction comprising a rising edge of a response to the pulse, and an associated characteristic varying in a different direction, the associated characteristic varying in the different direction comprising a falling edge of the response to the pulse; and

a differential analog-to-digital converter coupled to the waveform capture circuit, the differential analog-to-digital converter having inputs to receive a representation of the characteristic varying in the one direction and to receive a representation of the associated characteristic varying in the different direction.

The '706 Patent was recently construed by the U.S. District Court for the Western District of Texas in Claim Construction Order, *Neodron Ltd. v. Cypress Semiconductor Corp.*, 6:20-cv-523-ADA (W.D. Tex. Mar. 29, 2021), Dkt. No. 37. There, the court addressed related claim-construction disputes as follows:

term	Plaintiff's Proposal	WDTX Defendants' Proposal	WDTX Construction
"manipulating the first response and the second response to reject noise" • '706 Patent, Claim 1	No construction necessary.	"using digital representations of the first and second responses to eliminate noise"	Plain-and-ordinary meaning.

Id. at 4.

II. LEGAL PRINCIPLES

A. Claim Construction

"It is a 'bedrock principle' of patent law that 'the claims of a patent define the invention to which the patentee is entitled the right to exclude.'" *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (en banc) (quoting *Innova/Pure Water Inc. v. Safari Water Filtration Sys., Inc.*, 381 F.3d 1111, 1115 (Fed. Cir. 2004)). To determine the meaning of the claims, courts start by considering the intrinsic evidence. *Id.* at 1313; *C.R. Bard, Inc. v. U.S. Surgical Corp.*, 388 F.3d 858, 861 (Fed. Cir. 2004); *Bell Atl. Network Servs., Inc. v. Covad Commc'n Group, Inc.*, 262 F.3d 1258, 1267 (Fed. Cir. 2001). The intrinsic evidence includes the claims themselves, the specification, and the prosecution history. *Phillips*, 415 F.3d at 1314; *C.R. Bard, Inc.*, 388 F.3d at

861. The general rule—subject to certain specific exceptions discussed *infra*—is that each claim term is construed according to its ordinary and accustomed meaning as understood by one of ordinary skill in the art at the time of the invention in the context of the patent. *Phillips*, 415 F.3d at 1312–13; *Alloc, Inc. v. Int'l Trade Comm'n*, 342 F.3d 1361, 1368 (Fed. Cir. 2003); *Azure Networks, LLC v. CSR PLC*, 771 F.3d 1336, 1347 (Fed. Cir. 2014) (“There is a heavy presumption that claim terms carry their accustomed meaning in the relevant community at the relevant time.”) (vacated on other grounds).

“The claim construction inquiry … begins and ends in all cases with the actual words of the claim.” *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1248 (Fed. Cir. 1998). “[I]n all aspects of claim construction, ‘the name of the game is the claim.’” *Apple Inc. v. Motorola, Inc.*, 757 F.3d 1286, 1298 (Fed. Cir. 2014) (quoting *In re Hiniker Co.*, 150 F.3d 1362, 1369 (Fed. Cir. 1998)). First, a term’s context in the asserted claim can be instructive. *Phillips*, 415 F.3d at 1314. Other asserted or unasserted claims can also aid in determining the claim’s meaning, because claim terms are typically used consistently throughout the patent. *Id.* Differences among the claim terms can also assist in understanding a term’s meaning. *Id.* For example, when a dependent claim adds a limitation to an independent claim, it is presumed that the independent claim does not include the limitation. *Id.* at 1314–15.

“[C]laims ‘must be read in view of the specification, of which they are a part.’” *Id.* (quoting *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995) (en banc)). “[T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’” *Id.* (quoting *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)); *Teleflex, Inc. v. Ficosa N. Am. Corp.*, 299 F.3d 1313, 1325 (Fed. Cir. 2002). But, “[a]lthough the specification may aid the court in

interpreting the meaning of disputed claim language, particular embodiments and examples appearing in the specification will not generally be read into the claims.”” *Comark Commc’ns, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187 (Fed. Cir. 1998) (quoting *Constant v. Advanced Micro-Devices, Inc.*, 848 F.2d 1560, 1571 (Fed. Cir. 1988)); *see also Phillips*, 415 F.3d at 1323. “[I]t is improper to read limitations from a preferred embodiment described in the specification—even if it is the only embodiment—into the claims absent a clear indication in the intrinsic record that the patentee intended the claims to be so limited.” *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004).

The prosecution history is another tool to supply the proper context for claim construction because, like the specification, the prosecution history provides evidence of how the U.S. Patent and Trademark Office (“PTO”) and the inventor understood the patent. *Phillips*, 415 F.3d at 1317. However, “because the prosecution history represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Id.* at 1318; *see also Athletic Alternatives, Inc. v. Prince Mfg.*, 73 F.3d 1573, 1580 (Fed. Cir. 1996) (ambiguous prosecution history may be “unhelpful as an interpretive resource”).

Although extrinsic evidence can also be useful, it is “less significant than the intrinsic record in determining the legally operative meaning of claim language.”” *Phillips*, 415 F.3d at 1317 (quoting *C.R. Bard, Inc.*, 388 F.3d at 862). Technical dictionaries and treatises may help a court understand the underlying technology and the way one skilled in the art might use claim terms, but technical dictionaries and treatises may provide definitions that are too broad or may not be indicative of how the term is used in the patent. *Id.* at 1318. Similarly, expert testimony may aid a court in understanding the underlying technology and determining the particular meaning of a term

in the pertinent field, but an expert's conclusory, unsupported assertions as to a term's definition are not helpful to a court. *Id.* Extrinsic evidence is "less reliable than the patent and its prosecution history in determining how to read claim terms." *Id.* The Supreme Court has explained the role of extrinsic evidence in claim construction:

In some cases, however, the district court will need to look beyond the patent's intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period. *See, e.g., Seymour v. Osborne*, 11 Wall. 516, 546 (1871) (a patent may be "so interspersed with technical terms and terms of art that the testimony of scientific witnesses is indispensable to a correct understanding of its meaning"). In cases where those subsidiary facts are in dispute, courts will need to make subsidiary factual findings about that extrinsic evidence. These are the "evidentiary underpinnings" of claim construction that we discussed in *Markman*, and this subsidiary factfinding must be reviewed for clear error on appeal.

Teva Pharm. USA, Inc. v. Sandoz, Inc., 574 U.S. 318, 331–32 (2015).

B. Departing from the Ordinary Meaning of a Claim Term

There are "only two exceptions to [the] general rule" that claim terms are construed according to their plain and ordinary meaning: "1) when a patentee sets out a definition and acts as his own lexicographer, or 2) when the patentee disavows the full scope of the claim term either in the specification or during prosecution."² *Golden Bridge Tech., Inc. v. Apple Inc.*, 758 F.3d 1362, 1365 (Fed. Cir. 2014) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1365 (Fed. Cir. 2012)); *see also GE Lighting Solutions, LLC v. AgiLight, Inc.*, 750 F.3d 1304, 1309 (Fed. Cir. 2014) ("[T]he specification and prosecution history only compel departure from the plain meaning in two instances: lexicography and disavowal."). The standards for finding lexicography or disavowal are "exacting." *GE Lighting Solutions*, 750 F.3d at 1309.

² Some cases have characterized other principles of claim construction as "exceptions" to the general rule, such as the statutory requirement that a means-plus-function term is construed to cover the corresponding structure disclosed in the specification. *See, e.g., CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1367 (Fed. Cir. 2002).

To act as his own lexicographer, the patentee must “clearly set forth a definition of the disputed claim term,” and “clearly express an intent to define the term.” *Id.* (quoting *Thorner*, 669 F.3d at 1365); *see also Renishaw*, 158 F.3d at 1249. The patentee’s lexicography must appear “with reasonable clarity, deliberateness, and precision.” *Renishaw*, 158 F.3d at 1249.

To disavow or disclaim the full scope of a claim term, the patentee’s statements in the specification or prosecution history must amount to a “clear and unmistakable” surrender. *Cordis Corp. v. Boston Sci. Corp.*, 561 F.3d 1319, 1329 (Fed. Cir. 2009); *see also Thorner*, 669 F.3d at 1366 (“The patentee may demonstrate intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.”). “Where an applicant’s statements are amenable to multiple reasonable interpretations, they cannot be deemed clear and unmistakable.” *3M Innovative Props. Co. v. Tredegar Corp.*, 725 F.3d 1315, 1326 (Fed. Cir. 2013).

C. Definiteness Under 35 U.S.C. § 112, ¶ 2 (pre-AIA) / § 112(b) (AIA)

Patent claims must particularly point out and distinctly claim the subject matter regarded as the invention. 35 U.S.C. § 112, ¶ 2. A claim, when viewed considering the intrinsic evidence, must “inform those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). If it does not, the claim fails § 112, ¶ 2 and is therefore invalid as indefinite. *Id.* at 901. Whether a claim is indefinite is determined from the perspective of one of ordinary skill in the art as of the time the application for the patent was filed. *Id.* at 911. As it is a challenge to the validity of a patent, the failure of any claim in suit to comply with § 112 must be shown by clear and convincing evidence. *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360, 1365 (Fed. Cir. 2017). “[I]ndefiniteness is a question of law and in effect part of claim construction.” *ePlus, Inc. v. Lawson Software, Inc.*, 700 F.3d 509, 517 (Fed. Cir. 2012).

When a term of degree is used in a claim, “the court must determine whether the patent provides some standard for measuring that degree.” *Biosig Instruments, Inc. v. Nautilus, Inc.*, 783 F.3d 1374, 1378 (Fed. Cir. 2015) (quotation marks omitted). Likewise, when a subjective term is used in a claim, “the court must determine whether the patent’s specification supplies some standard for measuring the scope of the [term].” *Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1351 (Fed. Cir. 2005). The standard “must provide objective boundaries for those of skill in the art.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014).

III. AGREED CONSTRUCTIONS

The parties have agreed to constructions set forth in their LPR 4-5(d) Claim Construction Chart (Dkt. No. 55). Based on the parties’ agreement, the Court hereby adopts the agreed constructions.

IV. CONSTRUCTION OF DISPUTED TERMS

A. U.S. Patent No. 8,054,090

A-1. “charge-accumulation capacitor” and “charge-measurement capacitor”

Disputed Term ³	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“charge-accumulation capacitor” • ‘090 Patent Claims 1, 4, 10	no construction necessary	indefinite
“charge-measurement capacitor” • ‘090 Patent Claim 1, 4, 10	no construction necessary	indefinite

³ For all term charts in this order, the claims in which the term is found are listed with the term but: (1) only the highest-level claim in each dependency chain is listed, and (2) only asserted claims identified in the parties’ LPR 4-5(d) Claim Construction Chart (Dkt. No. 55) are listed.

Because the parties' arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties' Positions

Plaintiff submits: Defendant's indefiniteness argument is based on the faulty premise that one of ordinary skill in the art would understand "claim language in a foolish way." The meaning of the term "capacitor" in the electrical arts is plain without construction. The modifiers "charge-accumulation" and "charge-measurement" refer not to types of capacitors, but rather to the roles of the two distinct capacitors within the context of the claims, as informed by surrounding claim language. That a single capacitor in the exemplary embodiments is alternatively described as both an accumulation capacitor and a measurement capacitor (which is distinct from a described coupling capacitor) does not support interpreting the separate "charge-accumulation capacitor" and "charge-measurement capacitor" of the claims in a manner that renders the claims nonsensical. Rather, the meaning of these claim terms is plain in the context of the claims: "'charge-accumulation' is just a name for a capacitor upon which charge accumulates before being transferred to the charge-measurement capacitor, and 'charge-measurement' is a name for a capacitor that received the charge and is then measured in order to determine the amount of charge." Dkt. No. 50 at 11–13.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '090 Patent fig.3. **Extrinsic evidence:** Brogioli Decl.⁴ ¶¶ 34–41 (Dkt. No. 44-1); Thornton Decl.⁵ ¶¶ 36, 39, 41, 43–46 (Dkt. No. 44-2).

⁴ Expert Declaration of Michael C. Borgioli, Ph.D. (Jan. 26, 2021).

⁵ Declaration of Dr. Mitchell A. Thornton (Jan. 26, 2021).

Defendant responds: The invention described in the '090 Patent includes a first capacitor, referred to as a “coupling capacitor,” connected to a second capacitor, referred to alternatively as an “accumulation” or “measurement” capacitor. As described, charge is transferred from the coupling capacitor to the accumulation/measurement capacitor, where the amount of transferred charge is measured as a voltage across the accumulation/measurement capacitor. The claims, however, “abandon the naming convention found throughout the specification.” Notably, the charge-accumulation capacitor and the charge-measurement capacitor of the claims are different components. “As a result, there is a fatal inconsistency between how the specification describes ‘charge-accumulation capacitor’ and how the term is used in the claims.” Further, the claims are directed to “two of the same capacitor” rather than two disparate capacitors as described in the patent and recite connections for the charge-accumulation capacitor that contradict the described connections for that capacitor. Further, the patentee amended the claims during prosecution to remove a “coupling capacitor” and add a “charge-measurement capacitor,” disclaiming the coupling-capacitor construction of “charge-accumulation capacitor” that Plaintiff effectively advocates here. Dkt. No. 53 at 10–21.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '090 Patent fig.3, col.2 ll.56–61, col.2 ll.63–67, col.3 ll.1–8, col.7 ll.35–39, col.8 ll.39–40, col.8 ll.43–45, col.8 ll.52–53, col.9 ll.20–22, col.11 ll.19–33; '090 Patent File Wrapper Oct. 22, 2008 Application, Claim 1 (Defendant’s Ex. C, Dkt. No. 53-4 at 27–50, 48), March 25, 2011 Office Action at 3 (Defendant’s Ex. C, Dkt. No. 53-4 at

21–26, 24), July 25, 2011 Response at 3 (Defendant’s Ex. C, Dkt. No. 53-4 at 10–20, 12). **Extrinsic evidence:** Thornton Decl.⁶ ¶¶ 34, 36–42, 45 (Defendant’s Ex. A, Dkt. No. 43-2).

Plaintiff replies: The meanings of these terms are reasonably certain given the surrounding claim language. “Charge-accumulation capacitor” is not specially defined in the ’090 Patent or prosecution history such that the charge-accumulation capacitor of the claims must exclude the coupling capacitor in the embodiment of Figure 3. Indeed, Defendant’s expert opines that the charge-accumulation capacitor is structured in the claims the same as the coupling capacitor in the embodiment. Dkt. No. 54 at 6–10.

Plaintiff cites further intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’090 Patent col.11 ll.27–33; ’090 Patent File Wrapper July 25, 2011 Response at 8–9 (Defendant’s Ex. C, Dkt. No. 53-4 at 10–20, 17–18). **Extrinsic evidence:** Thornton Decl. ¶¶ 48–50.

Analysis

The issue in dispute distills to whether “charge-accumulation capacitor” in the claims must be structured identically to the charge accumulation capacitor 112 in the Figure 3 embodiment. It is not so limited. The meanings of the terms in dispute are plain, and reasonably certain, in the context of the surrounding claim language.

The claims themselves provide significant context as to the meaning of the capacitor terms. For instance, Claim 4 of the ’090 Patent provides:

4. An apparatus comprising:
a *charge-measurement capacitor having a second plate coupled to a first plate of a charge-accumulation capacitor*; and
one or more non-transitory computer-readable storage media embodying logic that is operable when executed to:

⁶ Declaration of Dr. Mitchell A. Thornton (Jan. 26, 2021). This document is substantially identical to the document submitted as Dkt. No. 44-2.

ground the first plate of the charge-accumulation capacitor;
inject a predetermined amount of charge onto the charge-measurement capacitor through a resistor coupled to a voltage source;
transfer an amount of charge accumulated on a second plate of the charge-accumulation capacitor to a first plate of the charge-measurement-capacitor, the charge having accumulated on the second plate of the charge-accumulations capacitor due at least in part to noise; and
determine, through a measured voltage across the charge-measurement capacitor, the amount of charge.

'090 Patent col.14 ll.19–36 (emphasis added). Here, it is certain that: (1) the charge-accumulation capacitor has two plates, (2) the first charge-accumulation-capacitor plate is grounded, (3) the second charge-accumulation-capacitor plate is coupled to a distinct charge-measurement capacitor, (4) the charge-accumulation capacitor accumulates charge, (5) an amount of accumulated charge is transferred from the charge-accumulation capacitor to the charge-measurement capacitor, and (6) the charge-measurement capacitor is used to measure the amount of charge.

While the description of embodiments of the invention may equate an exemplary charge-accumulation capacitor with an exemplary charge-measurement capacitor, nothing identified by Defendant rises to the exacting standard to define “charge-accumulation capacitor” as “charge-measurement capacitor” in all contexts. Indeed, Defendant’s entire indefiniteness argument is premised on the fact that equating these two terms in the context of the claims yields a nonsensical result. Defendant appears to argue that the charge-accumulation capacitor is necessarily the charge-measurement capacitor because the functions of charge accumulation and charge measurement are tied together in the described embodiment. The Court disagrees. Notably, the “key” or “coupling capacitor” (105) of the Figure 3 embodiment is described as “capacitively chargeable.” *Id.* at col.6 ll.44–47, col.6 ll.54–58. That the key/coupling capacitor is “chargeable” indicates that it may accumulate charge. The patent also describes that “charge indicative of noise induced on the coupling capacitor” is transferred to the accumulation/measurement capacitor

(112). *See, e.g., id.* at col.3 ll.1–8, col.5 ll.4–10, col.8 1.40–46; *see also, id.* at col.11 ll.20–22 (describing “packets of charge picked up on the Y plate 104 of the coupling capacitor 105 during the acquisition cycles”). This suggests that charge due to noise is collected by the key/coupling capacitor, i.e., that this charge is accumulated on the capacitor, for it to be transferred to the accumulation/measurement capacitor. While it is true that the patent describes that the charge transferred from the key/coupling capacitor is accumulated on the accumulation/measurement capacitor, the patent does not preclude the accumulation of charge on the key/coupling capacitor. In other words, the patent does not restrict the accumulation of charge to only a single accumulation/measurement capacitor. Rather, it allows for accumulation of charge on multiple capacitors. Ultimately, the patent is reasonably clear that a charge-accumulation capacitor does not necessarily only accumulate charge and that a capacitor not denoted as a charge-accumulation capacitor is not thereby precluded from accumulating charge.

In the context of the surrounding claim language and the description of the invention, the reasonable interpretation of the “charge-accumulation capacitor” and “charge-measurement capacitor” nomenclature of the patent is that the terms refer to the use of a capacitor in a circuit. A charge-accumulation capacitor is used to accumulate charge, a charge-measurement capacitor is used to measure charge. This comports with the described embodiment in which a single capacitor is used both to accumulate and measure charge and with the claims in which one capacitor is used to accumulate charge and another to measure charge.

Accordingly, Defendant has failed to prove any claim is indefinite for including the Capacitor terms. The Court further construes these terms as follows:

- “charge-accumulation capacitor” means “capacitor used to accumulate charge”;
- “charge-measurement capacitor” means “capacitor used to measure charge.”

A-2. “grounding” and “ground”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“grounding” • ’090 Patent Claim 1	no construction necessary	actively grounding alternatively: • grounding as part of the operation of the device
“ground” • ’090 Patent Claims 4, 10		

Because the parties’ arguments and proposed constructions with respect to these terms are related, the Court addresses the terms together.

The Parties’ Positions

Plaintiff submits: The meaning of the term “ground” in the electrical arts is plain without construction. Further, the ’090 Patent describes that the capacitor may start in the grounded state and does not necessarily need to be “actively” placed in that state. Dkt. No. 50 at 10.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’090 Patent figs.4, 6, col.8 ll.23–29, col.10 ll.52–57. **Extrinsic evidence:** Brogioli Decl. ¶¶ 32–33 (Dkt. No. 44-1).

Defendant responds: The terms at issue refer to the action of taking “something from an ungrounded state to a grounded state,” rather than simply to the state of being grounded. Consistent with the description of the invention, this requires actively switching from an ungrounded state to a grounded state. Dkt. No. 53 at 21–23.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’090 Patent col.8 ll.40–47, col.8 1.67 – col.9 1.4, col.9 ll.11–14, col.9 ll.33–40. **Extrinsic evidence:** Thornton Decl. ¶¶ 51–57 (Defendant’s Ex. A, Dkt. No. 43-2).

Plaintiff replies: The “grounding” and “ground” of the claims do not require taking the capacitor from an ungrounded state to a grounded state. “Claim elements with present participles in a method claim need not be an ‘act’ but may merely describe the device involved in the method claim.” Dkt. No. 54 at 5–6.

Analysis

The dispute distills to two issues. First, whether “grounding” and “ground” in the claims each require an active step. They do. Second, whether these steps must switch a capacitor from an ungrounded state to a grounded state. They are not so limited.

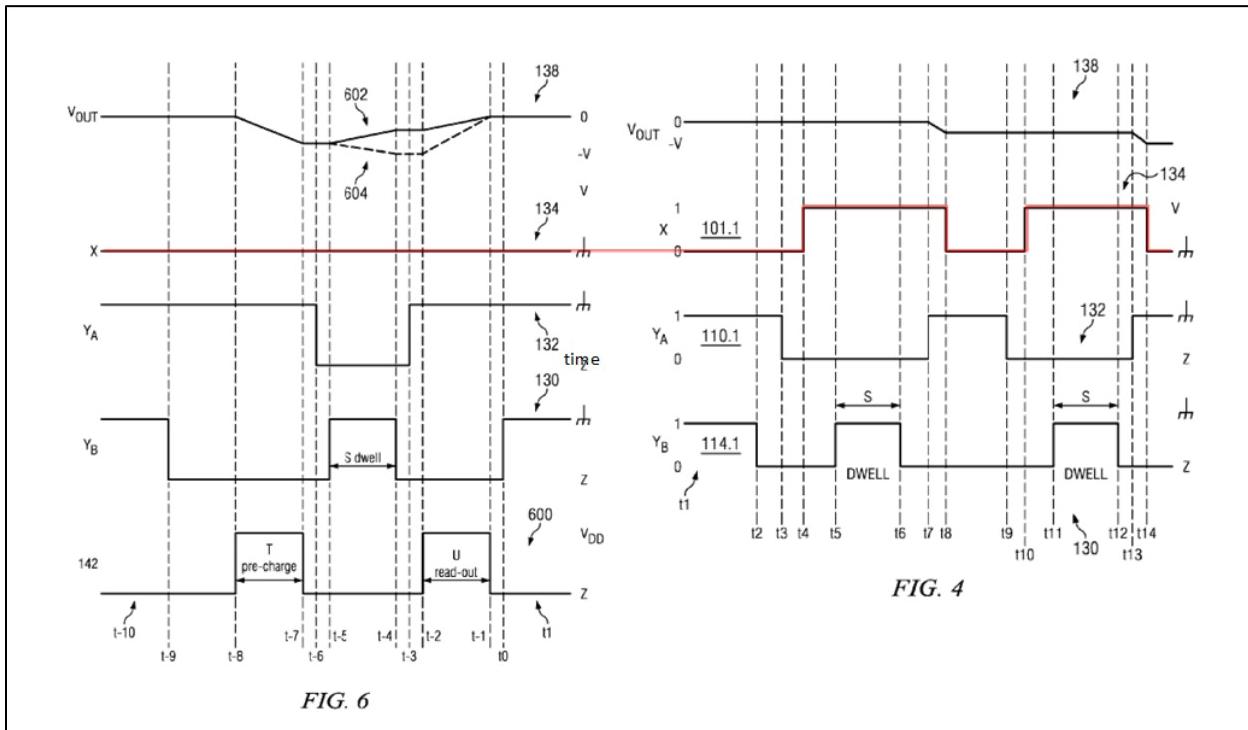
These terms appear in the claims as an affirmative step of a performed or programmed method. For instance, Claim 1 recites “A method comprising: grounding a first plate of a charge-accumulation capacitor” ’090 Patent col.13 ll.66–67. Claim 4 similarly recites “An apparatus comprising: … one or more non-transitory computer-readable storage media embodying logic that is operable when executed to: ground the first plate of the charge-accumulation capacitor” *Id.* at col.14 ll.19–26. And Claim 10 recites “A non-transitory computer-readable storage media embodying logic that is operable when executed to: ground a first plate of a charge-accumulation capacitor” *Id.* at col.14 ll.57–59. In each claim, the step of “grounding” or “ground” is clearly recited as an affirmative step of the performed or programmed method rather than as an adjective modifying structure.

The Court is not convinced that the plain meanings of the grounding terms encompass an adjectival modifier of a device used in the method. Plaintiff cites *Summit 6, LLC v. Samsung Elecs. Co.*, 802 F.3d 1283 (Fed. Cir. 2015) and *Credle v. Bond*, 25 F.3d 1566 (Fed. Cir. 1994) to support its contention. But these cases do not support Plaintiff’s position. Rather, they support that functional claim language used in a phrasal adjective does not set forth a function that must be

affirmatively performed to satisfy the claim. For instance, *Summit 6* addressed the following claim language: “A computer implemented method … comprising: … pre-processing said digital content at said client device in accordance with one or more pre-processing parameters, said one or more pre-processing parameters ***being provided*** to said client device from a device separate from said client device …” *Summit 6*, 802 F.3d at 1287–88. The phrase “*being provided*” was not used in the claim as a verb, but rather as “a phrase that characterizes the claimed pre-processing parameters.” *Id.* at 1291. The phrase was not a step in the claimed method. *Credle* addressed the following claim language in a method claim: “applying a spout to one of the webs extending outwardly therefrom and with its inner end open and flexibly securing the form.” *Credle*, 25 F.3d at 1571. The court held that “it is clear from the structure of the clause that the phrases ‘extending outwardly therefrom,’ ‘with its inner end open,’ and ‘flexibly securing the form’ all modify and describe the spout.” *Id.* The court further noted that clause was introduced by “*applying*,” a “present participle designating [a] method step[].” *Id.* at 1572. Neither case supports reading the present participle “*grounding*” or “*ground*” as a phrasal adjective.

Finally, the Court rejects that the grounding terms necessarily require switching from an ungrounded state to a grounded state. Notably, the ’090 patent describes a scenario in which a capacitor plate already at ground is set to ground. Figures 4 and 6 of the patent, reproduced and annotated below, depict the time-evolution of states of points in the Figure 3 circuit. ’090 Patent col.6 ll.1–2, col.6 ll.7–9. “The timing diagrams 130, 132, 134 and 138 correspond to the same timing diagrams shown on FIG. 4, except that the timing diagrams shown in FIG. 6 precede those shown in FIG. 4, i.e. they run from t-10 to t1.” *Id.* at col.10 ll.30–33. Line 134, highlighted in red below, “shows a relative timing of a drive signal provided to the X plate 100 of the key [105].” *Id.* at col.8 ll.9–15. “At a first time t1, the charge measurement circuit 108 is initialised, i.e. reset, …

[and the] X plate 100 ... [is] thus set to ground." *Id.* at col.8 ll.23–29. As depicted and described, the X plate 100 (timing line 134) is already at ground prior to being "set to ground" at time t1. Later, at time t8, "the X plate 100 of the key 105 is connected to ground." *Id.* at col.8 ll.57–59. This indicates that the initial state of a capacitor plate is irrelevant to the act of grounding the capacitor plate. In other words, "grounding" and "ground" each encompasses: (1) taking a step to connect a plate to ground even though it is already connected to ground and (2) taking a step to connect a plate to ground when it is not already connected to ground.



Accordingly, the Court construes these terms as follows:

- "grounding" means "connecting to ground"; and
- "ground" means "connect to ground."

A-3. “predetermined amount of charge”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“predetermined amount of charge” • ’090 Patent Claims 1, 4, 10	no construction necessary	an amount of charge that is less than fully charging the charge measurement capacitor

The Parties’ Positions

Plaintiff submits: The meaning of this term is plain without construction. There is nothing in the intrinsic record that justifies limiting the meaning of the term as Defendant proposes. Dkt. No. 50 at 15–16.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’090 Patent col.3 ll.43–63, col.10 l.62 – col.11 l.7, col.11 ll.47–51, col.12 ll.32–35. **Extrinsic evidence:** Brogioli Decl. ¶ 46 (Dkt. No. 44-1).

Defendant responds: The operation of the claims requires injecting a predetermined amount of charge onto a capacitor and separately transferring charge onto the capacitor. Thus, technologically, the predetermined amount of charge must be less than the maximum amount of charge the capacitor can hold else it would not be possible to separately transfer charge onto the capacitor. Dkt. No. 53 at 23–26.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’090 Patent col.3 ll.59–63, col.11 ll.29–33, col.11 ll.47–51, col.12 ll.32–40. **Extrinsic evidence:** Thornton Decl. ¶ 55 (Defendant’s Ex. A, Dkt. No. 43-2).

Plaintiff replies: The meaning of “fully charged” in Defendant’s proposal is not clear and, in any event, the ’090 Patent teaches that noise can result in charge being removed or added to the capacitor. Thus, “noise can change the charge of a capacitor that is ‘fully charged,’” and it is not

necessary for the capacitor to be less than “fully charged” to implement the invention. Dkt. No. 54 at 12–13.

Analysis

The issue in dispute is whether the claim language is limited to a predetermined amount of a charge that is less than the charge on a fully charged charge-accumulation capacitor. It is not.

The '090 Patent teaches that the charge on a capacitor may be positive or negative. For instance, the patent teaches an embodiment with two coupled capacitors (a coupling capacitor and a measurement capacitor) in which one or more packets of charge are transferred from the coupling capacitor to the measurement capacitor. '090 Patent col.3 ll.9–23. This can be configured such that “the amount of charge accumulated on the charge accumulation capacitor [is] independent of the **sign of the charge** induced on the Y plate of the coupling capacitor.” *Id.* at col.3 ll.50–54 (emphasis added). This can be done to keep the voltage on the charge accumulation capacitor from changing sign (e.g., from positive to negative). *Id.* at col.3 ll.54–63. The patent further teaches:

Once the charge on the measurement capacitor Cs due to noise on the Y plate is measured, the amount of noise is determined. ... It will be appreciated that the charge on the capacitor after the dwell time could be less than or equal to the pre-charge charge, since **charge can be removed from the capacitor as a result of the noise** as well as being added.

Id. at col.12 ll.27–35 (emphasis added). This suggests that charge may be removed by adding charge of the opposite sign.

The teachings of the patent suggest that negative charge may accumulate on the charge-accumulation capacitor and be transferred to a fully positively charged charge-measurement capacitor to lower the voltage on the measurement capacitor. Simply, the Court is not convinced by Defendant’s technological argument that charge cannot be transferred from the charge-accumulation capacitor to the charge-measurement capacitor if the charge-measurement capacitor

is somehow fully charged. This argument overlooks the signed nature of charge taught in the patent.

Accordingly, the Court rejects Defendant's proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.

A-4. “noise”

Disputed Term	Plaintiff's Proposed Construction	Defendant's Proposed Construction
“noise” • '090 Patent Claims 1, 4, 10	no construction necessary	a charge value that is obtained from subtracting the amount of charge on the measurement capacitor after the pre-charge step from the measured charge on the measurement capacitor after the dwell time

The Parties' Positions

Plaintiff submits: The meaning of “noise” is plain without construction. Defendant's proposed construction is based on a description of an exemplary measure of a charge value due to noise (citing '090 Patent col.12 ll.35–39). This description is not a definition of “noise” in the '090 Patent. Rather, “noise” is used in the patent, including in the claims, according to its broad customary meaning. For instance, “noise” in the patent, including in the claims, is not limited to measured noise but rather refers to a broad category of electromagnetic disturbances. Dkt. No. 50 at 13–15.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** '090 Patent figs.6–9, col.1 1.64 – col.2 1.40, col.3 ll.1–8, col.11 1.12 – col.12 1.40. **Extrinsic evidence:** Brogioli Decl. ¶¶ 42–44 (Dkt. No. 44-1).

Defendant responds: The term “noise” is defined in the '090 Patent as “a charge value that is obtained from subtracting the amount of charge on the measurement capacitor after the pre-charge

step from the measured charge on the measurement capacitor after the dwell time” (quoting ’090 Patent col.12 ll.35–39). Further, the claims themselves describe the claimed noise as noise that is an amount of charge on a capacitor. There are no other forms of measured noise described in the patent. Dkt. No. 53 at 26–27.

In addition to the claims themselves, Defendant cites the following **intrinsic evidence** to support its position: ’090 Patent col.2 ll.1–40, col.12 ll.35–39, col.12 ll.41–42.

Plaintiff replies: The term “noise” is used broadly in the patent according to its customary meaning. It is not defined as Defendant suggests. Dkt. No. 54 at 11–12.

Analysis

The issue in dispute is whether “noise” in the claims is limited as Defendant alleges. It is not. The “noise” of the claims is not defined in the ’090 Patent as Defendant contends. The disclosure Defendant relies upon provides as follows:

Once the **charge** on the measurement capacitor Cs **due to noise** on the Y plate is measured, the amount of noise is determined. ***The detected noise is the difference between the charge on the measurement capacitor from the pre-charge cycle and the measured charge on the measurement capacitor after the dwell time.*** It will be appreciated that the charge on the capacitor after the dwell time could be less than or equal to the pre-charge charge, since charge can be removed from the capacitor as a result of the noise as well as being added. In other words ***the noise is a charge value that is obtained from subtracting the amount of charge on the measurement capacitor Cs 112 after the pre-charge step from the measured charge on the measurement capacitor Cs 112 after the dwell time. “Noise charge” will be used to identify this charge difference.***

’090 Patent col.12 ll.27–40 (emphasis added). This is not a definition of “noise.” Rather, this passage describes an exemplary process for measuring the charge “due to noise.” In this process, “[t]he detected noise” is the charge difference advocated by Defendant. The passage explicitly defines “noise charge” to denote this detected noise. It does not redefine “noise,” which term is plainly used according to its customary meaning. Indeed, the patent describes various types of noise without reference to a charge value, such as “noise signals produced by radio frequency

radiation by radio frequency signals,” “switching noise as a result of switching and refreshing pixels,” “impulsive noise related to pixel scanning and refresh,” and “sinusoidal noise, such as that produced by mains electricity.” *Id.* at col.1 l.64 – col.2 l.52. Simply, nothing identified by Defendant rises to the exacting standard required to redefine “noise” as Defendant proposes.

Accordingly, the Court rejects Defendant’s proposed construction and determines that this term has its plain and ordinary meaning without the need for further construction.

B. U.S. Patent No. 8,253,706

B-1. “manipulating the first response and the second response to reject noise at frequencies less than a frequency associated with the pulse”

Disputed Term	Plaintiff’s Proposed Construction	Defendant’s Proposed Construction
“manipulating the first response and the second response to reject noise at frequencies less than a frequency associated with the pulse” • ’706 Patent Claim 1	no construction necessary	indefinite

The Parties’ Positions

Plaintiff submits: Defendant’s indefiniteness argument is based on the faulty premise that one of ordinary skill in the art would ”interpret the claim language in an unreasonable way.” Notably, recitation of “a pulse” in Claim 1 of the ’706 Patent does not mean “that the claimed invention could only ever be applied to a single-pulse waveform.” Indeed, other accused-infringers have acknowledged that this term is not indefinite. Dkt. No. 50 at 16–19.

In addition to the claims themselves, Plaintiff cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’706 Patent, at [57] Abstract, col.3 ll.51–52, col.3 ll.65–66, col.5 ll.4–5. **Extrinsic evidence:** Brogioli Decl. ¶¶ 47–50 (Dkt. No. 44-1); Thornton

Decl. ¶¶ 64–70 (Dkt. No. 44-2); <https://www.electronics-tutorials.ws/waveforms/waveforms.html>⁷.

Defendant responds: This term renders Claim 1 indefinite because “it is impossible to determine ‘frequencies less than the frequency associated with the pulse.’” Specifically, the claim references only a single pulse and the ’706 Patent describes operating on only a single pulse. When represented in the frequency domain, a single pulse has an infinite number of frequencies. Thus, it is not reasonably certain what frequency is the frequency “associated with the pulse.” Dkt. No. 53 at 31–34.

In addition to the claims themselves, Defendant cites the following intrinsic and extrinsic evidence to support its position: **Intrinsic evidence:** ’706 Patent col.1 ll.61–67, col.2 ll.3–16, col.2 ll.25–38, col.3 ll.25–30, col.3 ll.39–42, col.3 ll.48–55, col.3 ll.59–62, col.3 ll.65–66, col.4 ll.20–23, col.4 ll.63–67, col.5 ll.1–8, col.5 ll.21–31, col.5 ll.34–38, col.5 ll.49–56. **Extrinsic evidence:** Thornton Decl. ¶¶ 64–69 (Defendant’s Ex. A, Dkt. No. 43-2).

Plaintiff replies: Under Federal Circuit precedent, claim recitation of “a pulse” and “the pulse” does not restrict the claims to a singular pulse, but rather encompasses one or more pulses. And the patent repeatedly describes using multiple pulses and describes “how the claimed invention can provide low-frequency noise rejection for touch-enabled consumer electronic devices that commonly use periodic drive signals with multiple pulses.” Dkt. No. 54 at 13–14.

Plaintiff cites further **intrinsic evidence** to support its position: ’706 Patent col.1 ll.6–10.

Analysis

The issue in dispute distills to whether the meaning of “frequency associated with the pulse” is reasonably certain. While the meaning is broad, it is reasonably certain.

⁷ Plaintiff did not submit an exhibit corresponding to the cited URL.

To begin, Defendant's indefiniteness argument is premised on the incorrect belief that the availability of an infinite number frequencies associated with the pulse renders the meaning of this term, and the claim, indefinite. The Federal Circuit addressed a similar issue in *BASF Corp. v. Johnson Matthey Inc.*, 875 F.3d 1360 (Fed. Cir. 2017). There, the Federal Circuit criticized—and reversed—a district court that: “credit[ed] [the expert’s] assertion that ‘a practically limitless number of materials’ could [meet the limitation], and . . . treat[ed] that scope as ‘indicating that the claims, as written, fail to sufficiently identify the material compositions.’” *Id.* at 1367. The Federal Circuit held that “the inference of indefiniteness simply from the scope finding is legally incorrect: ‘breadth is not indefiniteness.’” *Id.* (quoting *SmithKline Beecham Corp. v. Apotex Corp.*, 403 F.3d 1331, 1341 (Fed. Cir. 2005)).

The Court also rejects Defendant's supposition that the claim at issue is somehow limited to a single pulse. The claim simply requires “a pulse” but is not restricted from using multiple pulses. Notably, the '076 Patent teaches applying multiple pulses to the drive electrodes of a touch screen. For instance, the patent provides:

FIG. 2 shows a block diagram of features of an example embodiment of an apparatus 200 having a matrix touch screen 201 coupled to a circuit 210 to measure charge transfer. Matrix touch screen 201 includes ***drive electrodes 202, referred to as X lines or X electrodes***, that are capacitively coupled to receive electrodes 204, referred to as Y lines or Y electrodes.

'076 Patent col.2 ll.40–46 (emphasis added). The patent further provides:

Apparatus 200 can also include a control unit 220 to manage the charge measurement associated with **pulses applied to X lines** 202 of matrix touch screen 201 such that the measurement using the output of ADC 218 is synchronized. Control unit 220 can be configured to **apply pulses to X lines 202**. Alternatively, control unit 220 can be arranged to use and control measurement from pulse generation by another drive source.

Id. at col.3 ll.48–55 (emphasis added). See also, col.5 ll.1–8 (“Apparatus 300 can also include a control unit 320 to manage the charge measurement associated with **pulses applied to X lines** 302

of matrix touch screen 301 such that the measurement using the output of ADC 313 is synchronized.”). This suggests that a “frequency associated with” a pulse applied to an input (drive) line encompasses a repetition frequency of the pulse.

The Court also rejects that any numerical value of a frequency found in the pulse, or in the repetition of the pulse, is necessarily “associated with the pulse.” Defendant appears to argue a claim scope that encompasses any frequency, irrespective of whether the frequency is “associated with” the pulse, simply because the frequency may have the same numerical value as a frequency that is associated with the pulse. But this entirely, and improperly, reads out the “associated with” limitation.

Accordingly, Defendant has failed to prove any claim is indefinite for including this term. The Court further determines that this term has its plain and ordinary meaning without the need for further construction.

V. CONCLUSION

The Court adopts the constructions above for the disputed and agreed terms of the Asserted Patents. Furthermore, the parties should ensure that all testimony that relates to the terms addressed in this Order is constrained by the Court’s reasoning. However, in the presence of the jury the parties should not expressly or implicitly refer to each other’s claim construction positions and should not expressly refer to any portion of this Order that is not an actual construction adopted by the Court. The references to the claim construction process should be limited to informing the jury of the constructions adopted by the Court.

SIGNED this 13th day of May, 2021.



ROY S. PAYNE
UNITED STATES MAGISTRATE JUDGE